

Notice of Allowability

Application No.

10/708,381

Examiner

Alexander Sofocleous

Applicant(s)

CHEN ET AL.

Art Unit

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed April 25, 2006.
2. ☒ The allowed claim(s) is/are 1,2,4-8 and 15-18.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____



RICHARD ELMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

DETAILED ACTION

1. This action is responsive to the following communication: the Amendment filed April 25, 2006.
2. Claims 1-2, 4-8, and 15-18 are pending in the case. Claims 3, 9-14, and 19-20 are cancelled. Claims 1, 4, and 5 are currently amended. Claims 1 and 15 are independent claims.

Specification

3. The proposed specification corrections (paragraph 0015-0017) received on April 25, 2006 are approved by Examiner.

Drawings

4. The proposed drawings corrections (Figure 5) received on April 25, 2006 are approved by Examiner.

Allowable Subject Matter

5. **Claims 1-2, 4-8, and 15-18 are allowed.**
6. The following is an examiner's statement of reasons for allowance:

With respect to independent claim 1, there is no teaching or suggestion in the prior art to the second buried strap region and diffusion region formed in the p-well of the control cell being at a lower depth than the first buried strap region and diffusion

region formed in the p-well of the storage cell.

With respect to independent claim 15, there is no teaching or suggestion in the prior art to providing two deep trenches: one deep trench including a vertical storage cell and a deep trench capacitor and the other deep trench including a vertical control cell for controlling the threshold voltage of the storage cell by applying a voltage to the common conductor connecting the gate of the storage cell and control cell such that the voltage enables pinch-off resulting in the floating condition of the p-well decreases the threshold voltage when the storage cell is in an on-state or resulting in an increased gate over-drive and drive current when the storage cell is in an off-state.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Chidambarao et al. (U.S. Patent 6,573,561) show a pair of adjacent DRAM cells with buried straps at the same depth.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Sofocleous whose telephone number is 571-272-0635. The examiner can normally be reached on M-F 7:00am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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supervisor, Richard Elms can be reached on 571-272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AGS

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REPLACEMENT SHEET
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FIG. 4P

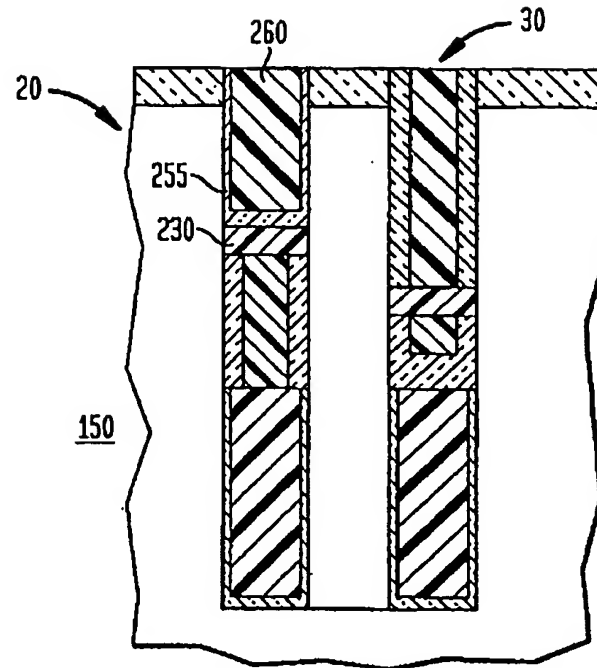


FIG. 5

